

PATENT ABSTRACTS OF JAPAN

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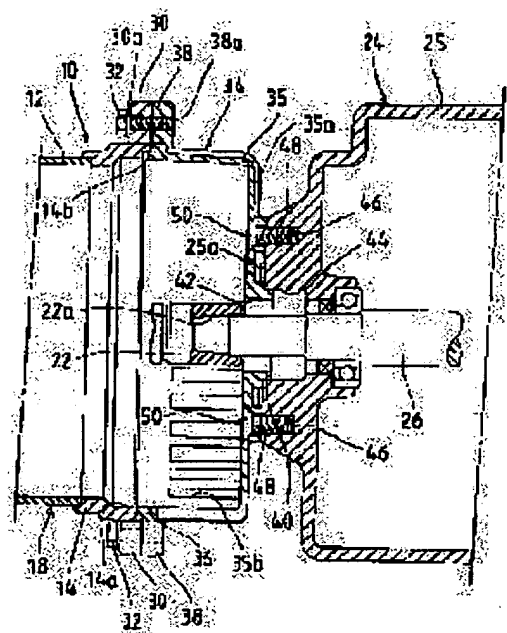
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(54) ENGINE DRIVEN GENERATOR

(57)Abstract:

PURPOSE: To simplify inspection process of engine driven generator and to enhance efficiency in manufacture.

CONSTITUTION: A circular protrusion 40 formed on the front blocked face 35a of a coupling bracket 34 is fit in a through hole 44 of an engine 24. The coupling bracket 34 is secured through four flat countersunk head screws 50 to the engine 24. Under that state, output shaft 26 of the engine 24 protrudes through the central through hole 42 of the circular protrusion 40 into the bracket 34, and a protrusion 36 formed at the rear opening end of the coupling bracket 34 is fit to a step 14b in the front bracket 14 of a generator 10. The coupling bracket 34 is secured through four bolts 32 to the front bracket 14. At that time, the output shaft 26 is inserted, while being aligned, into a tapered hole 22a in the rotor shaft 22 of the generator 10.



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CLAIMS

[Claim(s)]

[Claim 1] To the output shaft (26) which extends through the through-hole (44) drilled in casing (25) of an engine (24) While being formed in tubed [by which the shaft-orientations end was blockaded] in the generator it was made to link directly the shaft (22) of the rotator which extends through the through-hole (14a) drilled in casing (14) of a generator (10) The projected part (40) which can fit into the through-hole (44) in casing (25) of the aforementioned engine (24) is formed in the center of a lock out side (35a). The tubed main part fixed to this casing (25) free [attachment and detachment] through two or more screw threads (50) (35), The through-hole which is drilled in the center of a lock out side (35a) of the aforementioned tubed main part (35), and permits insertion of the aforementioned output shaft (26) (42), The projected part which is formed in the opening edge of the aforementioned tubed main part (35), and can fit into the through-hole (14a) in casing (14) of the aforementioned generator (10) (36), A bracket (34) is constituted from two or more pieces of a joint (38) by which connection fixation is carried out through a bolt (32) at the piece of a joint (30) which was formed so that it might project in radial at the aforementioned tubed main part (35) periphery, and was formed in the casing (14) periphery of the aforementioned generator (10) in correspondence. The generator characterized by the axial center of an output shaft (26) in this engine (24) and the axial center of the shaft (22) in a generator (10) carrying out alignment coincidence when connection fixation of the aforementioned generator (10) is carried out through a bracket (34) at an engine (24).

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the generator which enabled it to perform the exact assembly of this generator and an engine easily while being able to inspect a generator alone in more detail about a generator in the generator which links the shaft of a rotator and the output shaft of an engine in a generator directly.

[0002]

[Description of the Prior Art] On the occasion of leisure, such as engineering-works work with much movement, and a camp, the compact generator which linked the shaft of a rotator and the output shaft of an engine in a generator directly as power supplies, such as a power tool and lighting fitting, is used suitably. Before this generator's having structure which constructs across a generator and the engine for power and shipping it in a pipe-like frame generally at works, it needs to inspect whether the generator concerned can supply regular power. For this reason, after assembling the engine supplied by the engine maker, passing on a line, attaching the component part of a generator to this engine one by one and considering as a finished product conventionally, a generator is inspected by pouring oil, a gasoline, etc. into this finished product, and actually operating an engine.

[0003]

[Problem(s) to be Solved by the Invention] In the power generation engine of the form which linked directly the generator mentioned above and the engine, since it is necessary to perform the alignment of a shaft correctly, the present condition is conducting inspection of this generator in the state it having attached to the engine. In this case, while taking the time and effort which puts in oil, a gasoline, etc. about all products, the sampling work of the oil after inspection or a gasoline took time, and it had become the cause that manufacture efficiency falls.

[0004] Moreover, in order to deal with oil and a gasoline in works, various kinds of fire prevention equipment had to be prepared by Fire Service Law etc., and there was also a fault in which facility cost increases. Furthermore, although it is a convention range, since there is variation in the rotational frequency of an engine, the difficulty that exact power of the generator driven with this engine cannot be inspected is also pointed out.

[0005]

[Objects of the Invention] then, this invention -- as a result of a person's advancing consideration in quest of a means solve this suitably, in view of a technical problem inherent in the conventional technology mentioned above, after conducting inspection with a generator simple substance paying attention to operation inspection of the engine itself already having been conducted by the maker side, it came to hit on an idea per the ability to be able to attain laborsaving by assembling both

[0006] Namely, this invention aims at being proposed in view of the technical problem mentioned above solving this suitably, and proposing the generator which attains simplification of an inspection process and may raise manufacture efficiency.

[0007]

[Means for Solving the Problem] In order to conquer the aforementioned technical problem and to attain the desired end suitably this invention In the generator it was made to link directly the shaft of the rotator which extends through the through-hole drilled in casing of a generator to the output shaft which extends through the through-hole drilled in casing of an engine The tubed main part which the projected part which can fit into the through-hole in casing of the aforementioned engine is formed in the center of a lock out side, and is fixed to this casing free [attachment and detachment] through two or more screw threads while being formed in tubed [by which the shaft-orientations end was blockaded], The through-hole which is drilled in the center of a lock out side of the aforementioned tubed main part, and permits insertion of the aforementioned output shaft, The projected part which is formed in the opening edge of the aforementioned tubed main part, and can fit into the through-hole in casing of the aforementioned generator, A bracket

is constituted from two or more pieces of a joint by which connection fixation is carried out through a bolt at the piece of a joint which was formed so that it might project in the aforementioned tubed book outside-of-the-body periphery radial, and was formed in the casing periphery of the aforementioned generator in correspondence. When connection fixation of the aforementioned generator is carried out through a bracket at an engine, it is characterized by the axial center of an output shaft in this engine and the axial center of the shaft in a generator carrying out alignment coincidence.

[0008]

[Example] Next, about the generator concerning this invention, a suitable example is given, and it explains below, referring to an accompanying drawing. In addition, since it is related with the structure of the portion which connects an engine and a generator, this invention is first explained per outline composition of the attachment section of the generator in an engine.

[0009] As shown in drawing 4, the through-hole 44 of the diameter of necessary which carries out opening was drilled in clamp-face 25a of a generator 10 by the casing 25 of the engine 24 in the generator concerning an example, and, as for the output shaft 26 of an engine 24, only necessary length has extended to the method of outside through this through-hole 44. The bore size of this through-hole 44 is positioned so that the center of this through-hole 44 and the axial center of an output shaft 26 may be in agreement while being set up more greatly than the outer diameter of an output shaft 26. In addition, the nose of cam of an output shaft 26 is formed in the shape of a taper.

[0010] Moreover, four tapped holes 46 are formed in clamp-face 25a of casing 25 so that a through-hole 44 may be surrounded, as shown in drawing 3, and the connection bracket 34 later mentioned through this tapped hole 46 is attached in casing 25. In addition, the arrangement pattern of four tapped holes 46 is prescribed by JIS.

[0011] In the generator 10 which drawing 1 requires for an example, it is a notch ***** side elevation in part, casing 18 consists of brackets 14 and 16 with which this generator 10 is arranged before and after the cylinder-like case 12 and this case 12, and various component parts, such as a stator and a rotator (neither is illustrated), are included in the interior of this casing 18. And a generator 10 is assembled by the state which can be inspected as a simple substance by fixing the brackets 14 and 16 of order with a bundle with two or more bolts 20. In addition, explanation the side which points to clamp-face 25a of the aforementioned engine 24 shall be called a "front" for convenience, and the side estranged from clamp-face 25a shall be called the "back."

[0012] The shaft 22 of a rotator faced the center of through-hole 14a in the anterior part bracket 14, and only necessary length has extended to the front-face side. Tapered bore 22a which carries out opening is drilled in a front end side, and output-shaft 26 nose of cam of an engine 24 is fitted in this tapered bore 22a, and it is constituted by this shaft 22 so that transfer of power may be made (refer to drawing 4). Moreover, a cooled blade 28 is arranged in the periphery of a shaft 22, and this cooled blade 28 inhales exterior air in casing at the time of operation of a generator 10, and functions to perform air cooling.

[0013] Two or more (example four pieces) formation of the piece 30 of a joint which projects in radial at the periphery of the aforementioned anterior part bracket 14 is carried out at intervals of predetermined at the hoop direction (refer to drawing 2). Through-hole 30a parallel to the aforementioned shaft 22 is drilled in each piece 30 of a joint, and in the front face of the anterior part bracket 14, the bolt 32 inserted in this through-hole 30a constitutes so that positioning fixation of the connection bracket 34 may be carried out. Moreover, as shown in drawing 4, step 14b which permits fit-in of the projected part 36 (after-mentioned) formed in the connection bracket 34 is attached around the inner skin in the front opening edge of the anterior part bracket 14.

[0014] Where the alignment of an output shaft 26 and a shaft 22 is made through the connection bracket 34, connection fixation of the generator 10 and engine 24 of composition of having mentioned above is carried out. That is, as this connection bracket 34 is shown in drawing 3, the through-hole 48 is drilled in four tapped holes 46 currently drilled in clamp-face 25a of the aforementioned engine 24 by anterior part lock out side 35a of the tubed main part 35 with which the shaft-orientations end (front end side) was blockaded, and the corresponding position. And positioning fixation of the bracket 34 is carried out at an engine 24 by screwing in the tapped hole 46 of correspondence the flat countersunk head screw 50 inserted in each through-hole 48 from the bracket side.

[0015] Moreover, the circular projected part 40 of the diameter of necessary protrudes in the center of a front face in lock out side 35a, and the main through-hole 42 which permits insertion of the output shaft 26 of an engine 24 in the center of this projected part 40 is drilled in it. The diameter of this circular projected part 40 is set as the size which can be fitted in the through-hole 44 formed in the aforementioned clamp-face 25a, and the connection bracket 34 and an engine 24 are connected by the so-called pillbox structure through this circular projected part 40. Furthermore, the output shaft 26 which extends from the through-hole 44 of an engine 24 in the state where connection fixation of the connection bracket 34 was carried out, in an engine 24 is set up so that the axial center may be inserted in this through-hole 42 where alignment coincidence is carried out with the center of the main through-hole 42, and it may extend to the

inner direction.

[0016] As shown in drawing 4 , the projected part 36 which can fit into step 14b of the aforementioned anterior part bracket 14 is formed in the posterior part opening edge of the aforementioned connection bracket 34, and the connection bracket 34 and the anterior part bracket 14 are connected with it by the so-called pillbox structure by fitting this projected part 36 into step 14b. Moreover, as shown in drawing 2 , two or more pieces 38 of a joint which project in radial are formed in the opening side periphery of the connection bracket 34 so that it may correspond with the piece 30 of a joint formed in the anterior part bracket 14. each piece 38 of a joint -- ****ing -- a hole -- 38a is formed and positioning fixation of the connection bracket 34 is correctly carried out in the front face of a generator 10 by making the corresponding pieces 30 and 38 of a joint counter, and connecting with a bolt 32

[0017] Moreover, in the state where the connection bracket 34 was connected with the generator 10 according to pillbox structure, the axial center in the shaft 22 of the aforementioned rotator is set up so that alignment coincidence may be carried out with the center of the aforementioned main through-hole 42. That is, through the connection bracket 34, by carrying out connection fixation mutually, the alignment of the shaft 22 of a generator 10 and the output shaft 26 of an engine 24 is performed correctly, and the nose of cam of an output shaft 26 is certainly fitted in tapered bore 22a of a shaft 22 in a generator 10 and an engine 24 (refer to drawing 4). Consequently, the turning effort of an engine 24 is correctly transmitted to a generator 10, and can demonstrate the performance as specification.

[0018] In addition, when the bore of the connection bracket 34 is set as a major diameter and fixes this bracket 34 to the anterior part bracket 14 rather than the diameter of the aforementioned cooled blade 28, a cooled blade 28 is constituted possible [surrounding] inside. Moreover, when two or more air suction mouth 35b is formed in a hoop direction at a proper interval and the aforementioned cooled blade 28 rotates in the peripheral surface of the connection bracket 34, exterior air is introduced in casing 18 through this suction mouth 35b.

[0019]

[Function of Example(s)] Next, it explains per operation of the generator concerning the example mentioned above.

[0020] First, while constituting casing 18 by connecting the brackets 14 and 16 positioned forward and backward on both sides of the aforementioned case 12 with two or more bolts 20, a generator 10 is assembled by attaching various component parts, such as a rotator and a stator, to the interior of this casing 18. Moreover, the connection bracket 34 is fixed to the anterior part bracket 14 through two or more bolts 32. At this time, the axial center of the shaft 22 in a rotator is carrying out alignment coincidence with the center of the main through-hole 42 of the connection bracket 34.

[0021] Since the assembled generator 10 is in the state which can operate as mentioned above, this can be operated through a checking motor (not shown) and it can inspect whether regular power is obtained. In this case, since it is usable in the motor whose rotational frequency is stable as a driving source, exact inspection can be conducted. Moreover, since neither oil nor a gasoline is used, it is possible not to need fire prevention equipment but to hold down facility cost cheap.

[0022] The generator 10 which inspection completed is transported to an assembly line with an engine 24, it is attached to an engine 24 here, and a motion engine is completed. In this case, while demounting the aforementioned connection bracket 34 from a generator 10 first and fitting the circular projected part 40 of this bracket 34 in the through-hole 44 of an engine 24, each through-hole 48 and a tapped hole 46 are made in agreement. And by screwing in the tapped hole 46 of correspondence the flat countersunk head screw 50 inserted in the through-hole 48, the connection bracket 34 is certainly fixed to the regular position of an engine 24 (refer to drawing 4). At this time, after the axial center of the output shaft 26 of an engine 24 and the center of the main through-hole 42 of the connection bracket 34 have carried out alignment coincidence, this output shaft 26 extends inside a bracket through the main through-hole 42.

[0023] Subsequently, while attaching a generator 10 by fitting step 14b formed in through-hole 14a of the anterior part bracket 14 into the projected part 36 which protruded on the opening side of the connection bracket 34, opposite coincidence of the pieces 30 and 38 of a joint of both the brackets 14 and 34 is carried out. And positioning fixation of the generator 10 is carried out to the connection bracket 34 by carrying out connection fixation of the pieces 30 and 38 of both joints with a bolt 32. The nose of cam of the output shaft 26 which extends inside through this main through-hole 42 since the axial center in the shaft 22 of a rotator and the center in the main through-hole 42 of the connection bracket 34 carry out alignment coincidence as mentioned above at this time fits into tapered bore 22a of a shaft 22 correctly. That is, the alignment of a shaft 22 and an output shaft 26 is correctly performed by carrying out connection fixation of an engine 24 and the generator 10 through the connection bracket 34.

[0024] That is, with the generator 10 concerning an example, by attaching an engine 24 and a generator 10 through the connection bracket 34 connected by pillbox structure, respectively, the generator 10 which inspection completed beforehand is fixable to an engine 24, where an exact alignment is made. Thereby, the attachment part mark by the side of the generator 10 in the assembly line of an engine 24 and a generator 10 are reduced, and improvement in working capacity can be aimed at. Furthermore, since inspection in the attachment state of an engine 24 and a generator 10 can

be excluded, it is necessary to deal with neither oil nor a gasoline in works, and fire prevention equipment etc. becomes unnecessary.

[0025]

[Effect of the Invention] As explained above, since the generator concerning this invention constituted the generator and the engine free [attachment and detachment] through the bracket which can be connected mutually according to pillbox structure, where the exact alignment of the shaft of a generator and the output shaft of an engine is made, it can be attached easily. Moreover, since inspection with a generator simple substance can be conducted, it is not necessary to actually operate and to inspect the finished product which attached this generator and the engine, shortening of working hours and complicated time and effort are saved, and there is an advantage which may raise manufacture efficiency remarkably.

[0026] Moreover, it is not necessary to prepare fire prevention equipment, and reduction of facility cost can be attained. Furthermore, the contamination in the works by the noise and exhaust gas which are produced by inspection which operates an engine can be suppressed, and the effect of being able to improve a work environment is done so.

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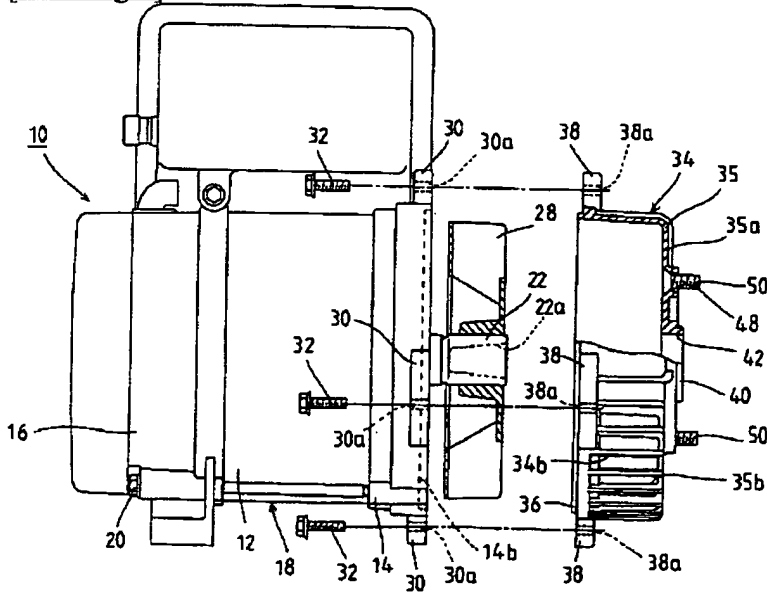
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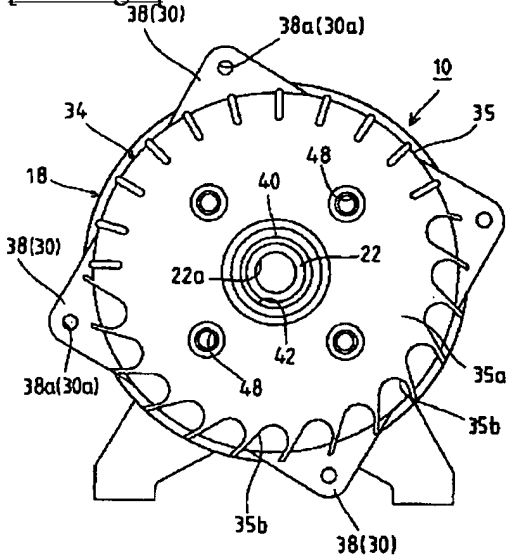
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DRAWINGS

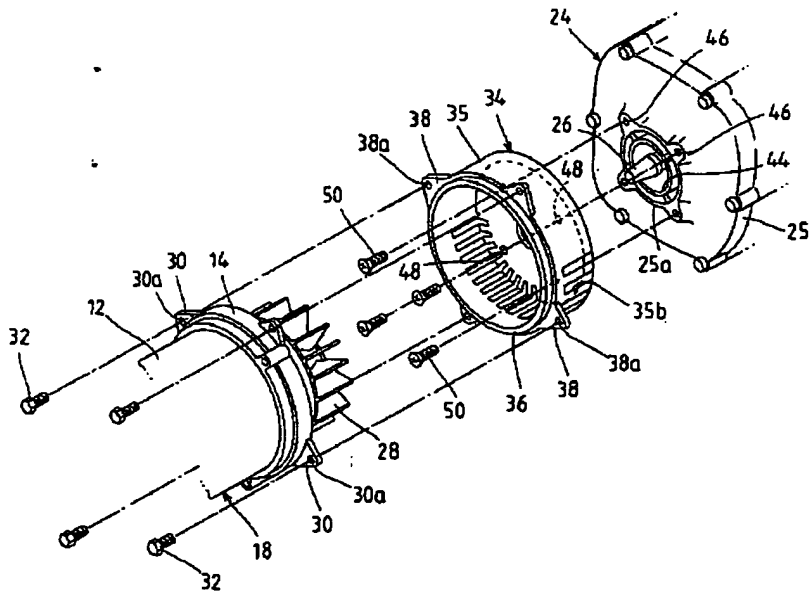
[Drawing 1]



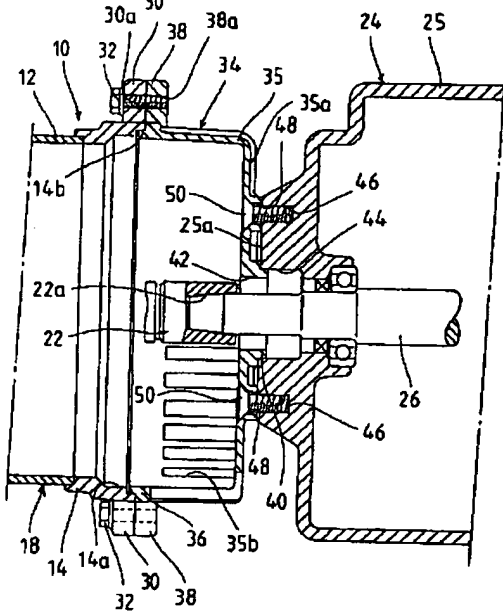
[Drawing 2]



[Drawing 3]



[Drawing 4]



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